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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/563,144

09/14/2006

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EXAMINER

LEUNG, JENNIFER A

ART UNIT

PAPER NUMBER

1797

NOTIFICATION DATE

DELIVERY MODE

07/14/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@tuckerellis.com  
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<b>Office Action Summary</b>	<b>Application No.</b> 10/563,144	<b>Applicant(s)</b> SHI, HANXIANG	
	<b>Examiner</b> JENNIFER A. LEUNG	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6-20-07</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Drawings***

1. Figure 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. The claims are objected to because they include reference characters which are not enclosed within parentheses (see claims 3-5).

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

3. Claims 1, 3, 4 and 6 are objected to because of the following informalities:

In claim 1, "round" (line 4) should be changed to --around--.

In claim 3, "the said rotary build-in member" (lines 1-2) should be changed to --said rotary build-in member--. Also, "round" (lines 3 and 9) should be changed to --around--. Also, --the-- should be inserted before "same plane" (lines 6 and 10).

In claim 4, "the said rotator" (line 2) should be changed to --said rotator--.

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In claim 6, “them” (line 3, twice recited) should be deleted.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 3-6, it is unclear as to the structural limitation applicant is attempting to recite by a “rotary build-in member”, a “rotator” and an “annular rotator”, since it appears from the specification that each of the elements are fixed elements which do not rotate. Claims 6 and 7 also appear to suggest fixed connections between the elements. Please note that a “rotator” is by definition a thing which rotates. Also, to be “rotary” is to be turning or capable of turning around an axis, as a wheel; or having a part or parts that turn on an axis.

Regarding claim 2, it is unclear as to whether the recitation that “the waved inner surface can be formed by rotating a curved line or a poly-line” is a positive limitation. Also, it is unclear as to what is meant by a “poly-line”.

Regarding claim 5, it is unclear as to whether the recitation that “several such units can be mounted in the reactor from the top to the bottom” (lines 3-4) is a positive limitation. Is Applicant positively claiming a reactor comprising multiple units?

Regarding claim 7, it is unclear as to whether the recitation that “the unit can be connected together” is a positive limitation. Is Applicant positively claiming a reactor

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comprising multiple units that are connected together by welding, riveting, bolting, etc.?

***Claim Rejections - 35 USC § 102 and § 103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Broughton (US 3,523,762).

Regarding claims 1 and 2, Broughton discloses an apparatus (see FIGs. 2-3; column 4, line 48 to column 6, line 15) comprising a cylindrically shaped shell (i.e., defining circular chamber **8**) with a smooth inner surface, wherein a rotary build-in member comprising a rotator (i.e., convex baffling means **11**) and an annular rotator (i.e., concave baffling means **12**) are installed inside the reactor shell, the rotator **11** and the annular rotator **12** being formed by rotating a curved line, as a generatrix, with the exception of straight lines, around the axis.

Regarding claim 3, the annular rotator **12** is settled on the shell **8** and formed by rotating a straight line (i.e., located at the inner surface of the shell) and a curved line (i.e., defining faces **17**, **18** of baffling means **12**) around the rotation axis, wherein the straight line is parallel to the rotation axis, and the two ends of the curved line are connected with the two ends of the straight

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line respectively, and the straight line and the curved line are within the same plane, and the distance between the straight line and the rotation axis is longer than that between the curved line and the rotation axis (see FIG. 2). The rotator **11** is formed by rotating a curved line around the rotation axis, the curved line's two ends being connected with the two ends of the rotation axis respectively, and the curved line and the rotation axis are within the same plane. The rotator **11** and the annular rotator **12** being coaxial, and the rotator **11** being mounted on the annular rotator **12** (i.e., the baffling means **11** indirectly rests upon a lower baffling means **12**).

Regarding claim 4, the maximum diameter of the rotator **11** is not less than the inner diameter of the annular rotator **12** (see FIG. 2).

Regarding claims 5 and 7, the rotator **11**, annular rotator **12** and shell **8** are integrated to define a unit, and several units are capable of or can be connected together (see FIG. 2).

Instant claims 1-5 and 7 structurally read on the apparatus of Broughton.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Broughton (US 3,523,762).

The shell **8**, the rotator **11**, and the annular rotator **12** appear to be manufactured separately and installed as desired within the apparatus (see FIG. 2). The examiner further takes Official Notice that welding, riveting, screwing or bolting would have been recognized as well known connecting techniques in the art.

7. Claims 1, 2, 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Bodnaras (US 5,741,466).

Regarding claim 1, Bodnaras (see FIG. 6a, for example) discloses an apparatus comprising a shell (i.e., outer shell **84**), wherein a rotary build-in member comprising a rotator

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(i.e., inner core **88**) and an annular rotator (i.e., inner shell **86**) is installed inside the shell **84**, the rotator **88** and the annular rotator **86** being formed by rotating a curved line, as a generatrix, with the exception of straight lines, around the axis.

Regarding claim 2, the reactor shell **84** is a cylinder shape with an inner surface waved transversely or longitudinally, the waved inner surface being formed by rotating a curved line or a poly-line (see FIG. 6a).

Regarding claims 5 and 7, the rotary build-in member comprising the rotator **88**, the annular rotator **86** and their corresponding shell **84** are integrated together to form a unit (see FIG. 6a). Also, several such units are structurally capable of and can be connected together from the top to the bottom (similarly to FIG. 4; see column 5, line 67 to column 6, line 8).

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bodnaras (US 5,741,466).

The shell **84**, the rotator **88**, and the annular rotator **86** appear to be manufactured separately and installed as desired (FIG. 6A). The examiner further takes Official Notice that welding, riveting, screwing or bolting would have been recognized as well known connecting techniques in the art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. LEUNG whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter D. Griffin can be reached on (571) 272-1447. The fax phone number for the

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organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A. Leung/  
Primary Examiner, Art Unit 1797